

IN THE CLAIMS

Please amend the claims as follows:

Claim 1-4 (Canceled).

Claim 5 (New): A continuous process for separating a mixture of hydrocarbons which has been obtained by extractive distillation of a C₄ fraction using a selective solvent and comprises the hydrocarbons from the C₄ fraction which are more readily soluble in the selective solvent than are the butanes and the butenes, which comprises feeding the mixture into a first distillation column in which it is separated into a stream which is taken off at the top and comprises 1,3-butadiene, propyne, possibly further low boilers and possibly water and a bottom stream comprising 1,3-butadiene, 1,2-butadiene, acetylenes and possibly further high boilers, with the proportion of 1,3-butadiene in the bottom stream from the distillation column being regulated in such a way that it is at least sufficiently high to dilute the acetylenes to outside the range in which there is a risk of spontaneous decomposition, and passing the stream taken off from the top of the first distillation column to a second distillation column and separating it into a stream which is taken off at the top and comprises propyne, possibly further low boilers and possibly water and a bottom stream comprising pure 1,3-butadiene in the second distillation column.

Claim 6 (New): The process as claimed in claim 5, wherein the proportion of 1,3-butadiene in the bottom stream from the distillation column is regulated in such a way that the proportion of acetylenes in the bottom stream is less than 30 mol%.

Claim 7 (New): The process as claimed in claim 5, wherein the bottom stream from the first distillation column and the stream from the top of the second distillation column are

fed to a reactive distillation column in which a selective hydrogenation of the hydrocarbons containing triple bonds to hydrocarbons containing double bonds is carried out by means of hydrogen in the presence of a heterogeneous catalyst, with partial conversion of the acetylenes, to give a stream comprising 1,3-butadiene, butanes, butenes and hydrocarbons containing triple bonds which have not been hydrogenated at the top and a bottom stream comprising high boilers which is discharged.

Claim 8 (New): The process as claimed in claim 5, wherein the stream taken off at the top of the reactive distillation column or a substream thereof is recycled to the extractive distillation.